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Editor's Note

Spring is quickly blossoming into summer. The days lengthen and the angle of the sunlight changes, providing a whole new perspective on the world around us.

Seeing things in a different light often allows us to make new discoveries, and to address previously unanswered questions with fresh insights. This issue of the IES newsletter takes a look at the new Ecosystem Literacy Initiative, aimed at nothing less than changing the way we all understand the natural world.

Let us help you gain a new outlook this year. Enjoy a Continuing Education course in wild plant identification. Introduce a child in your life to our Summer Ecology Day camp. Take in the beauty of nature and the benefits of low-impact methods as you explore our trails, gardens and greenhouse. For, in the words of Marcel Proust, "The real voyage of discovery consists not in seeking new landscapes but in having new eyes."

The *IES Newsletter* is published by the Institute of Ecosystem Studies, located at the Mary Flagler Cary Arboretum in Millbrook, New York.

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The Ecosystem Literacy Initiative: Learning the Language of Ecosystems

In January, IES announced a new era in its 23-year legacy of education. Dubbed the **Ecosystem Literacy Initiative (ELI)**, this new effort aims to help people think about the ecosystems we depend upon and link that understanding to their daily lives.

This is a particularly critical time for launching such an endeavor. Our world is changing in ways that threaten the sustainability of life on earth as we know it, and human activity is a major cause. "This is the first time in history that people have approached this level of global impact," explains Dr. Alan R. Berkowitz, IES Head of Education and leader of ELI. "A larger percentage of the Earth's total resources is being used or compromised by people than ever before. In the past, civilizations have gotten into trouble when they've reached similar junctures, when their ability to extract resources essentially outpaced their understanding of its consequences, or their capacity to deal with such consequences."

Ecologists know that an ecosystem approach – one that forces you to take a careful accounting of everything important in any given place – is essential for addressing the environmental issues facing our world today. But it's not enough for the scientific community to understand this: managers, policy makers, teachers, and citizens must also grasp the concepts of ecosystem function, if society is going to stem the tide of environmental change.

To reach the various target audiences, ELI will employ a multi-faceted approach. The core of the effort will consist of research on how people learn about ecosystems, how educators might teach about them and what kinds of ecosystem literacy various groups of people want and need. The knowledge gained from this research will enable IES to provide useful resources for educators in schools and beyond. ELI also will reach out to policy makers, managers and the general public, giving them the latest and most useful ecosystem information available via the web and other media. Third, ELI will serve to mentor the next generation of ecologists in taking and applying an ecosystem approach.

Why the ecosystem approach is crucial

People need ecosystems to do things – provide food, clean the water, clean the air, sustain diversity. Many of our environmental problems involve the degradation of such ecosystem functions. By embracing the ecosystem approach, we are all better equipped to understand, and hopefully improve, these situations.



The Hudson River, as viewed from the Clermont State Historic Site

Dr. Berkowitz offers our production ecosystems – those that produce fiber and food – as examples. "Our society needs these ecosystems to function for the long term. In order for this to happen, we can't keep treating them as simple systems where all you have to do is plant corn, add fertilizer and wait. There are microbes in the soil, beneficial insects, non-crop plants and fungi, pests that become resistant to pesticides and so on. We need to look at these croplands as ecosystems if we are going to learn how to extract what we need from them now, and in the future."

ELI to help fill an educational gap

Unfortunately, there is a gap in society's understanding of ecosystems. "The word 'ecosystem' appears more in national curricula than 'ecology', 'population' or even 'evolution,'" notes Dr. Berkowitz. "And yet, people don't seem to develop a readily useful grasp of the concept." From understanding their own ecology (their food, water and other inputs, as well the treatment of their waste products) to seeing farms or even the entire globe as ecosystems, people have a hard time building real ecosystem "budgets".

What accounts for this gap? "Due to their complexity, it's challenging to teach about and to understand ecosystems," admits Dr. Berkowitz. "You really need to get beyond textbooks and engage learners in more hands-on study of real world ecosystems." Furthermore, the evidence that scientists and citizens need in order to understand ecosystems is often long-term and extensive in its scope. "It's one thing to set up an aquarium in a classroom to study one species of fish," explains Dr. Berkowitz. "It's a lot harder to set up a complete ecosystem, and monitor all the components within it over a significant period of time." Harder still is the challenge to learn to see real places in the real world through this ecosystem "lens".

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IES President Gene E. Likens Elected to American Philosophical Society

On April 29th, 2006, the American Philosophical Society announced the election of Dr. Gene E. Likens, President and Director of IES, as a new member. Established in 1743 by Benjamin Franklin for the purpose of "promoting useful knowledge," the Society boasts among its members many of the founding fathers, scholars from all fields, and those representing the arts, professions and public and private affairs. Dr. Likens also joins influential scientists, such as John James Audubon, Charles Darwin and Albert Einstein.

Dr. Likens founded IES in 1983 as an international center for ecology research and education. He and his colleagues were the first to document the presence of acid rain in North America, and his decades of research have contributed greatly to our understanding of limnology, ecosystem disturbance and recovery and human accelerated environmental change. In the words of Dr. Estella B. Leopold, Professor Emeritus of Biology at the University of Washington, "This honor is way past due to a very prestigious and wonderful scientist... [one who has] contribut-

ed so very much in ... creativity and enduring research of great social value."

The American Philosophical Society, located in Philadelphia, is the oldest learned society in the United States. The activities of this eminent organization reflect the founder's spirit of inquiry, while sustaining a mission for the 21st century. The APS honors and engages leading scholars and professionals with membership and opportunities for multidisciplinary intellectual fellowship, supports research and education through grants, lectures and publications and serves scholars via an extensive research library of manuscripts and internationally recognized collections. Current membership of the APS includes 791 resident members and 153 foreign members. Dr. Likens is joined by an impressive group of new members that includes John Nash, subject of the movie *A Beautiful Mind*, novelist Joan Didion and U.S. Supreme Court Justice Ruth Bader Ginsberg.

Election to membership in the American



On Location Studios, Inc., Poughkeepsie, NY

Dr. Gene E. Likens

Philosophical Society recognizes extraordinary accomplishment, and we congratulate Dr. Likens on this latest honor. ●

Literacy, continued from page 1

To promote a greater knowledge of ecosystems, ELI will have both regional and national dimensions. Programs such as the Ecology Field Programs for school groups and Ecology Day Camps will continue to serve as community resources, as well as testing grounds for new educational modules. Teacher workshops and in-class support will enhance the ecosystem literacy of the entire Hudson Valley, while web-based materials will be of interest and use to the general public. Ecosystem-focused events at IES, such as behind-the-scenes tours of the research facilities and symposia applying the ecosystem approach to practical concerns, also are in the works.

The Changing Hudson Project

One new component of ELI is the Changing Hudson Project (CHP). We all know the river is constantly changing – hourly, daily, seasonally, as well as over years, decades, centuries. The physical and chemical character of the river varies, as do the living things within it. Some changes may be normal parts of the Hudson River ecosystem, while others can lead to significant, irreversible alterations in its character. Which of these are simply "bends" in the river ecosystem and which are "breaks" – fundamental, long-lasting shifts?

Thanks to a grant from the New York State Department of Environmental Conservation's Hudson River Estuary Program, CHP will help teachers and students explore this question

using real evidence that they collect themselves or obtain from existing scientific studies. A team of practicing teachers, scientists and educators will develop tools to help students visualize the Hudson River ecosystem – both in its unperturbed state and under various forms of disturbance. Using animations, graphics, simulation models and comparative studies, CHP will grow a web-based resource for educators and students throughout the Hudson River Valley. Understanding how changes can impact the biological communities of the river, or the usefulness of the river for drinking water and human recreation, make the study of science that much more relevant for students.

Since 1983, IES has been untangling the mysteries of ecosystem function while also helping advance the new field of ecology education. The Ecosystem Literacy Initiative will combine research and education in a focused effort to help address pressing concerns facing our society. "We now need to bring the concept of ecosystems more squarely into public discourse and into education," says Dr. Berkowitz. "The needs of the environment, the needs of the educational system and the needs of the public demand nothing less." ●

To learn more about ELI visit
www.ecostudies.org/eli.html

Calling All Campers!

Want to learn more about ecosystem engineers, the amazing plants and animals that make and change habitat for others? Come to the 2006 IES Ecology Day Camp, where you'll be a worm farmer, build a beaver dam, and explore the woods looking for leaf rolling insects and plants that make a habit of poisoning their neighbors!

Campers entering grades 2 through 7 will explore the ecosystems found on our 2000 acre property, perform experiments, hike, do nature crafts and play ecology games. Weekly sessions begin June 26 and run through August 25. For more information, visit our website at www.ecostudies.org/ed_eco_camps.html, or call Susan Eberth at 845-677-7600 ext. 316.

Search for New President Underway

In December, Dr. Gene E. Likens, the founding Director of IES, announced that he would be stepping aside as the organization's President and Director in May of 2007. Dr. Likens established the Institute in 1983, having been chosen from among an international pool of candidates to head a center for scientific research and education. Under his watch, IES has become a world-renowned leader in understanding the Earth's ecological processes. With areas of expertise that include aquatic science, forest health, urban ecology, air pollution, and disease ecology, the Institute is leading the way in applying the ecosystem approach to some of society's most pressing problems.

Dr. Paul G. Risser, Chair of the IES Board of Trustees, stated, "It is with great reluctance that the board has accepted Dr. Likens' plans to step aside as IES President and Director. As one of the foremost ecologists in the world, he has led the Institute with great vision, dedication and skill!" The Board now has begun an international search for Dr. Likens' successor, and Dr. Risser invites all of us to participate in this crucial effort:

Dear Members and Friends of IES:

Your continued and strong support has contributed so much to the Institute's success, and for this we are truly grateful. As you may know, our founder-president, Dr. Gene E. Likens, has decided to step aside from his administrative responsibilities and to focus his full-time attention on his world-class research program. Thus, we are beginning a search to identify his successor and I would like to invite your participation in the process.

During the last twenty-three years, Dr. Likens has helped create and lead the Institute, and he leaves its presidency with the institution playing an ever more important national and international role in environmental science and education.

We are undertaking an international search for the new president. A position description is available at www.ecostudies.org. If you have any suggestions as to actual candidates, or more general thoughts as to the search process, please feel free to contact me, (paul.risser@osrhe.edu) or our search consultant, Malcolm MacKay (mmackay@russellreynolds.com).

Thank you for your consideration. We begin the search confident that the Institute will attract outstanding candidates and that the person chosen as the next president will continue the superb performance and reputation of the Institute.

Sincerely,

Dr. Paul G. Risser, Chancellor
Oklahoma State Regents for Higher Education
and Chair, IES Board of Trustees

Generous Gift Honors Rachel Carson

April 6, 2006 marked the official dedication of the Rachel L. Carson Analytical Facility at IES. Located in the Gene E. Likens Laboratory building, the facility performs some 50,000 analyses each year in support of Institute research.

Benefactor Winsor Murley chose to name the lab room after one of his many heroes. In so doing he hopes to encourage others to learn about and emulate the woman many credit with kicking off the environmental movement.

Like Carson, Murley is a person who has made a difference, but who has not looked for praise or public recognition. A retired IBM engineer, Murley over the years has reached out beyond his family with resources – financial and otherwise – to support and mentor students of promise. Describing himself as someone who has "been around a while," Murley says the one thing that keeps him going is meeting "young people with inquiring minds."

Those who dwell, as scientists or laymen, among the beauties and mysteries of the earth are never alone or weary of life.

Rachel Carson

Murley's generous funding of the Rachel L. Carson Analytical Facility will serve inquiring minds of all ages, and society at large, as it helps IES scientists unravel the "mysteries of the Earth." It is a fitting tribute to Carson, whose name is synonymous with identifying and stopping damage to the natural world. ●

New Visitor Policy and Welcome Stations at IES

IES has unveiled its new visitor policy, which will allow easier and longer access to the grounds during the spring, summer and fall seasons. From April 1st through October 31st, visitors may enjoy Institute gardens, hiking trails and designated roadways, which will be open to the public Monday through Saturday, 9 a.m. to 6 p.m. and Sunday, 11 a.m. to 6 p.m., except major holidays. Visitors will no longer be required to check in at a central location, but may begin self-tours



Brian Croghan

at the points of interest. Informational kiosks with maps and interpretive pamphlets have been installed at Gifford House and the Fern Glen, as well as points along Institute internal roads, which afford visitors opportunities to jog, bicycle and bird watch.

For the safety of our visitors during hunting season and winter weather conditions, the outdoor attractions will be closed to the public from November 1st through March 31st. But, don't despair: the IES Greenhouse will remain open year-round from 9 a.m.-3:30 p.m. daily, to provide education, pleasure, inspiration and a respite from the cold.

IES property is an outdoor laboratory for Institute research and education. As always, we remind visitors to follow guidelines in the visitor information brochures and on the IES website, so as to maintain the integrity of research plots located throughout the grounds. ●

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Calendar

CONTINUING EDUCATION

Consider signing up for an adult continuing education course! Below is a sampling of class offerings. To request the complete brochure, please call 845-677-9643 or visit our web site at www.ecostudies.org/cep.html.

July 6 (6 sessions): Construction I: Grading and Drainage - LAST TIME OFFERED!

July 11 (1 Tues.): The Independent Garden

July 15 (1 Sat.): Summer Wild Plant ID

July 17 (1 Monday): Garden Designs with Foliage, Form and Texture

July 21 (1 Fri.): Drawing at the Trevor Zoo

July 22 & 23 (Sat. & Sun.): Landscape Painting and Drawing at Wethersfield and Innisfree

August 5 (1 Sat.): Color: Sequence and Complement

August 6 (1 Sun.): Gardening with Storm Water

August 7 (5 sessions): Fundamentals of Gardening

August 20 (1 Sun.): Tour of Battery Park, NYC

August 26 (1 Sat.): Ornamental Grasses in the Garden

IES Summer Ecology Day Camp NOW ACCEPTING REGISTRATIONS

Does your child enjoy exploring the natural world? Would they like the opportunity to perform hands-on experiments and interact with IES scientists? Campers will explore our 2,000 acre property through ecology experiments, hiking, nature art and ecology games. Summer camp consists of 9 one-week sessions from June 26th through August 25th. For information or to register please call 845-677-7600 ext. 316 or visit www.ecostudies.org/ed_eco_camps.html

HOURS

Outdoor Public Attractions: Mon.-Sat., 9-6, Sun. 11-6, from April 1 - October 31. Closed public holidays.

Gifford Garden, the Fern Glen, hiking trails and selected internal roadways are open to the public for exploration and enjoyment. Maps and other information are available at welcome stations located throughout the property. For further details, please visit www.ecostudies.org/visitor_information.html.

IES Greenhouse: Daily from 9-3:30, year-round.

The IES Greenhouse is a tropical plant paradise and a site for controlled environmental research. Managed using integrated pest management, plants thrive in its pesticide-free environment.



IES SEMINARS

Free scientific seminars are held at 11 a.m. on Fridays in the auditorium from September until early May. For information on upcoming lectures, visit www.ecostudies.org/friday.html

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THE INSTITUTE'S ALDO LEOPOLD SOCIETY

In addition to receiving benefits and discounts, Aldo Leopold Society members are invited to special lectures, excursions and science updates. To learn more, call the Development Office at 845-677-7600 ext. 120.

For information on current IES public events and attractions, visit the news corner at: www.ecostudies.org

For garden tips, visit: www.ecostudies.org/gardens.html.